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EXAMINER	
DAO, THUY CHAN	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/039,035	WILT ET AL.	
	Examiner	Art Unit	
	Thuy Dao	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 January 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to the reply filed on February 7, 2007. Applicant's request for reconsideration of the finality of the rejection of the last Office action mailed December 5, 2006 is persuasive and, therefore, the finality of that action is withdrawn.

2. Claims 1-26 have been examined.

Response to Amendments

3. The objection to drawings Figs. 3A-B is withdrawn in view of Applicants' amendments. The Examiner acknowledges receipt of replacement drawings Figs. 3A-B and 5.

Drawings

4. The drawings are objected to because of minor informalities: in Fig. 5, all arrows should be added and all dashed lines should be made continuous.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Response to Arguments

5. The Applicants are thanked for a thorough reply. Applicants' arguments have been fully considered. However, they are not persuasive.

Claim 1 is the representative claim of the group (Remarks, page 5, lines 14-15).

a) The limitations *"an intermediate language compiler capable of compiling the application instructions and the runtime instructions into a combined set of instructions executable by the processor for interacting with the selected driver"* (Remarks, page 4, lines 28-30).

As an initial matter, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

As set forth in the previous Office Action mailed December 5, 2006, Admitted Prior Art (APA) discloses:

an operating system having a selected driver that interacts with a computing component (e.g., page 1: 7-13; page 2: 1-4);

a plurality of application instructions (e.g., page 1: 27-28), *said instructions being in an intermediate language readable by an intermediate language compiler* (e.g., page 2: 11-16);

a plurality of runtime instructions, said instructions being in an intermediate language readable by an intermediate language compiler (e.g., page 1: 21-26);

compiling into a combined set of instructions executable by the processor for interfacing with the selected driver (e.g., page 2: 1-4); and

an intermediate language compiler (e.g., page 2: 11-17).

APA does not explicitly disclose *compiling the application instructions and the runtime instructions into a combined set of instructions executable by the processor for interacting with the selected driver.*

However, in an analogous art, Oldman discloses *compiling* a set of *application instructions and* a set of *runtime instructions into instructions executable by the processor for interacting with the selected driver* (e.g., FIG. 3, compiling Application Source 103 and Adl Headers 105 and Libraries 106 into a single Application Binary 107(a-c), and related text in col.6: 50 – col.7: 9; and

FIG. 8, compiling Application Source 103, OS Headers and Libraries 303(a-c), Adl Headers and Libraries 105-106 to a single Application Binary 113(a-c), col. 7: 19-45).

As set forth above, Oldman explicitly discloses a single Application Binary 113(a-c) (FIGs. 3 and 8) as a combined set of instructions (recited in claim 1) and as a single executable program (recited in claims 9 and 18). Neither APA nor Oldman explicitly discloses the set of application instructions and the set of runtime instructions being in an intermediate language.

However, in an analogous art, Sato discloses using Common front-end to compile source code (which is corresponding to Oldman, FIGs. 3 and 8, Application Source 103) to a common Intermediate Language IL (i.e., Sato, Fig. 1, Abstract Syntax Tree AST), and then to either OIL (the IL of PROTEL compiler), UCODE (the IL of MIPS C compiler), or MIIL (the IL of CHILL compiler), and

compiling said intermediate language (i.e., OIL, UCODE, or MIIL) by an intermediate language compiler (i.e., PROTEL, MIPS C, or CHILL compiler, respectively)

to an executable program (e.g., Sato, Fig. 1 and related text, pp. 924-925, section 3, Solution Overview).

Accordingly, the combined teaching of APA, Oldman, and Sato fully discloses and teaches the claimed limitations "*an intermediate language compiler capable of compiling the application instructions and the runtime instructions into a combined set of instructions executable by the processor for interacting with the selected driver*" (emphasis added).

b) The Applicants stated, "*Whereas the IL compiler of the present invention performs a unction not taught by the references ... That is. the IL compiler of the present invention has knowledge of a particular selected driver*" (Remarks, page 5, lines 7-11).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "*the IL compiler ... has knowledge of a particular selected driver*", emphasis added) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

c) In this Office Action, after further consideration, the examiner establishes new grounds of rejection as set forth in paragraphs 7 and 11 below.

Claim Rejections – 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 9 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 7,150,011 to Ha et al. (art made of record, hereinafter "Ha").

Claim 9:

Ha discloses *a method for software interaction with hardware, comprising:*

providing an application program in an intermediate programming language (e.g., FIG. 1, col.6: 30-37, abstract bytecode 60 including application program as abstract software bytecode 62; col.5: 42-47 application 200);

providing a runtime program in an intermediate programming language e.g., FIG. 1, col.6: 30-37, abstract bytecode 60 including runtime program as abstract hardware bytecode 61; col.5: 42-47 application 200);

compiling the application program and the runtime program into a single executable program for execution on a target computer system (e.g., col.6: 48-56; FIG. 2, col.5: 52-57).

Claim 18:

Claim 18 is a computer-readable medium version, which recites the same limitations as those of the method claim 9, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the references teach all of the limitations of the above claim, they also teach all of the limitations of claim 18.

Claim Rejections – 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-2, 6-10, 15-19, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA (art of record, Background of the Invention, pages 1-2) in view of Oldman (art of record, US Patent No. 6,769,115) and further in view of Sato (art of record, "Fast Compiler Re-Targeting to Different Platforms by Translating at Intermediate Code Level" to Sato, IDS document filed January 4, 2002).

Claim 1:

APA discloses *a computer system, comprising:*

a processor (e.g., page 2: 2-10)*;*

an operating system having a selected driver that interacts with a computing component (e.g., page 1: 7-13)*;*

a plurality of application instructions (e.g., page 1: 27-28)*, said instructions being in an intermediate language readable by an intermediate language compiler* (e.g., page 2: 11-16)*;*

a plurality of runtime instructions, said instructions being in an intermediate language readable by an intermediate language compiler (e.g., page 1: 21-26)*; and*

an intermediate language compiler (e.g., page 2: 11-17) *capable of compiling instructions executable by the processor for interacting with the selected driver* (e.g., page 2, 19-23).

APA does not explicitly disclose *compiling the application instructions and the runtime instructions into a combined set of instructions executable by the processor for interacting with the selected driver.*

However, in an analogous art, Oldman discloses *compiling* a set of *application instructions and* a set of *runtime instructions into instructions executable by the processor for interacting with the selected driver* (e.g., FIG. 3, compiling Application Source 103 and Adl Headers 105 and Libraries 106 into Application Binary 107(a-c), and related text in col.6: 50 – col.7: 9; and

FIG. 8, compiling Application Source 103, OS Headers and Libraries 303(a-c), Adl Headers and Libraries 105-106 to Application Binary 113(a-c), col. 7: 19-45).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Oldman into that of APA. One would have been motivated to do so to improve the program development environment in which a program which is to execute on a plurality of platforms can be developed as suggested by Oldman (e.g., col.3: 1-41).

As set forth above, Oldman explicitly discloses Application Binary 113(a-c) (FIGs. 3 and 8) as a combined set of instructions (recited in claim 1) and as a single executable program (recited in claims 9 and 18). Neither APA nor Oldman explicitly discloses the set of application instructions and the set of runtime instructions being in an intermediate language.

However, in an analogous art, Sato discloses using Common front-end to compile source code (i.e., Oldman, FIGs. 3 and 8, Application Source 103) to a common Intermediate Language IL (i.e., Sato, Fig. 1, Abstract Syntax Tree AST), and then to either OIL (the IL of PROTEL compiler), UCODE (the IL of MIPS C compiler), or MIIL (the IL of CHILL compiler), and finally to an executable program (e.g., Sato, Fig. 1 and related text, pp. 924-925, section 3, Solution Overview).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Sato into that of APA and Oldman. One would have been motivated to do so to provide an efficient solution of multiple targeting by translating at intermediate language (IL) level as suggested by Sato (e.g., page 923, col.1: 1-24, col.2: 24-32).

Claim 2:

The rejection of claim 1 is incorporated. APA also discloses *the selected driver comprises a plurality of intermediate language instructions* (e.g., page 2: 24-26).

Claim 6:

The rejection of claim 1 is incorporated. Oldman further discloses *the plurality of application instructions and the plurality of runtime instructions are delivered to the computer system over a network* (e.g., FIG. 3, Application Source 103, Adl Headers 105, and Libraries 106 are sent to different computer systems 319(a-c)).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Oldman into that of APA and Sato. One would have been motivated to do so as set forth in claim 1 above.

Claim 7:

The rejection of claim 2 is incorporated. Oldman further discloses *the selected driver is delivered over a network* (e.g., FIG. 8, OS Headers and Libraries 303(a-c) are sent to different computer system 319(a-c)).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Oldman into that of APA and Sato. One would have been motivated to do so as set forth above.

Claim 8:

The rejection of claim 1 is incorporated. APA also discloses *the intermediate language compiler comprises a Just-In-Time compiler* (e.g., page 2: 11-17).

Claim 9:

Claim 9 is a method version, which recites the same limitations as those of the computer system claim 1, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the references teach all of the limitations of the above claim, they also teach all of the limitations of claim 9.

Claim 10:

The rejection of claim 9 is incorporated. APA discloses *providing a driver program in an intermediate programming language* as set forth in claim 2 (e.g., page 2: 24-26) but does not explicitly disclose *the driver program is compiled with the application program and the runtime program into the single executable program.*

However, Oldman discloses *the driver program is compiled with the application program and the runtime program into the single executable program* (e.g., FIG. 8, blocks 103, 105, 106, and 303(a-c) are compiled into Application Binary 113(a-c), respectively).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Oldman into that of APA and Sato. One would have been motivated to do so as set forth above.

Claims 15-17:

Claims 15-17 are method versions, which recite the same limitations as those of the claims 6-8, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the references teach all of the limitations of the above claim, they also teach all of the limitations of claims 15-17.

Claims 18-19 and 24-26:

Claims 18-19 and 24-26 are computer-readable medium versions, which recite the same limitations as those of the method claims 9-10 and 15-17, respectively, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the references teach all of the limitations of the above claim, they also teach all of the limitations of claims 18-19 and 24-26, respectively.

10. Claims 3-5, 11-14, and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Oldman and Sato and further in view of Schmit (art of record, US Patent No. 6,148,438).

Claim 3:

The rejection of claim 2 is incorporated. Neither APA, Oldman, nor Sato explicitly discloses *the selected driver is split into user mode and kernel mode instructions.*

However, in an analogous art, Schmit discloses *the selected driver is split into user mode and kernel mode instructions* (e.g., col.4: 14-28).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Schmit into that of APA, Oldman, and Sato. One would have been motivated to do so to enable use of objects which comprise virtual function sin both user and kernel modes and reduce number of user mode/kernel mode transitions as suggested by Schmit (e.g., col.2: 19-36).

Claim 4:

The rejection of claim 3 is incorporated. Schmit further discloses *the user mode instructions of the selected driver translates from device driver interface instructions to hardware-specific commands* (e.g., col.5: 56-67; col.7: 56-62).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Schmit into that of APA, Oldman, and Sato. One would have been motivated to do so to as set forth in claim 3 above.

Claim 5:

The rejection of claim 4 is incorporated. APA also discloses *the selected driver writes hardware-specific commands into an operating system-allocated buffer for submission to a scheduler of the hardware's time* (e.g., page 1: 7-13).

Claim 11:

The rejection of claim 10 is incorporated. Schmit further discloses *the driver program comprises a kernel mode portion provided in an executable form* (e.g., col.4: 29-36).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Schmit into that of APA, Oldman, and Sato. One would have been motivated to do so to as set forth above.

Claim 12:

The rejection of claim 11 is incorporated. As set forth in claim 2, APA also discloses *the driver program provided in the intermediate language form* (page 2: 24-26). Schmit further discloses *the driver program comprises a user mode portion* as set forth in claim 3 (e.g., col.4: 14-28).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Schmit into that of APA, Oldman, and Sato. One would have been motivated to do so to enable use of objects which

comprise virtual function sin both user and kernel modes and reduce number of user mode/kernel mode transitions as suggested by Schmit (e.g., col.2: 19-36).

Claims 13-14:

Claims 13-14 are method versions, which recite the same limitations as those of the claims 4-5, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the references teach all of the limitations of the above claim, they also teach all of the limitations of claims 13-14.

Claims 20-23:

Claims 20-23 are computer-readable medium versions, which recite the same limitations as those of the claims 11-14, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the references teach all of the limitations of the above claim, they also teach all of the limitations of claims 20-23.

11. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,615,167 to Devins et al. (art made of record, hereinafter "Devins") in view of Sato.

Claim 1:

Devins discloses *a computer system, comprising:*

a processor; an operating system having a selected driver that interacts with a computing component (e.g., FIG. 1, col.3: 32-54);

a plurality of application instructions, a plurality of runtime instructions (e.g. FIG. 4, col.4: 56 – col.5: 44),

compiling the application instructions and the runtime instructions into a combined set of instructions executable by the processor for interacting with the selected driver (e.g., FIG. 6, col.5: 46 – col.6: 32; FIG. 2A-B, col.3: 55 – col.4: 21).

Devins does not explicitly disclose:

said instructions being in an intermediate language readable by an intermediate language compiler; and

an intermediate language compiler capable of compiling the application instructions and the runtime instructions into a combined set of instructions executable by the processor for interacting with the selected drive.

However, in an analogous art, Sato discloses:

said instructions being in an intermediate language readable by an intermediate language compiler (e.g., FIG. 1, after being processed by Common Front-end, Source code becomes an intermediate language, page 924, section 3.2 Common Intermediate Language IL)*; and*

an intermediate language compiler capable of compiling the application instructions and the runtime instructions into a combined set of instructions executable by the processor for interacting with the selected drive (e.g., FIG. 1, related text in page 924, left column: 39-54, MIPS compiler capable of compiling UCODE; wherein UCODE is the intermediate language produced from a C program, page 924, right column: 23-26).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Sato's teaching into Devins' teaching. One would have been motivated to do so to provide an efficient solution of multiple targeting by translating at intermediate language (IL) level as suggested by Sato (e.g., page 923, col.1: 1-24, col.2: 24-32).

Conclusion

12. Any inquiry concerning this communication should be directed to examiner Thuy Dao (Twee), whose telephone is (571) 272 8570. The examiner can normally be reached on the first Monday of the bi-week, and every Tuesday, Thursday, and Friday from 6:00AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam, can be reached at (571) 272 3695.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is (571) 272 2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

T. Dao

TUAN DAM
SUPERVISORY PATENT EXAMINER